DOCUMENT RESUME

ED 439 702 HE 305 427

AUTHOR Marschark-Gallinger, Janet
TITLE Deaf Ethnic Minorities: Have They a Double Liability?
PUB DATE XX
NOTE 27p.; Paper presented at the Annual Meeting of the American Educational Research Association (Atlanta, GA, April 11-14, 1993).
PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE EDRS Price MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Adults; Asian Americans; Black Students; Blacks; *College Attendance; *Deafness; *Employment Level; *Ethnic Groups; High Schools; Higher Education; Hispanic Americans; Income; *Outcomes of Education; *Socioeconomic Status
IDENTIFIERS Asian American Students; Hispanic American Students

ABSTRACT

In an effort to ascertain whether being deaf and also being a member of an ethnic minority group engenders dual disadvantages, the educational, labor force participation, occupations, earnings, and socioeconomic status of adults with deafness (n=6430) were compared by race. Comparisons were also done with racial groups in the general population. Results indicate that the individuals with deafness who are also from ethnic minorities showed patterns of attainment which mirror those of their ethnic counterparts in the general population, but are negatively intensified due to the combined effects of being both deaf and an ethnic minority. The Caucasians and Asians with deafness, earned the largest percentage of postsecondary degrees, and at higher award levels. They were also more often employed. Blacks and Hispanics with deafness least often completed postsecondary degrees. Blacks with deafness were second only to American Indians with deafness for high rates of unemployment. All variables considered, Blacks in this sample experienced the lowest attainment of the groups. The report discusses each comparison variable and provides specific data charts. (Contains 42 references.) (Author/CB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 408 756

Deaf Ethnic Minorities

Have They A Double Liability?

ERIC Processing and Reference Facility
1100 West Street, 2d Floor
Laurel, Maryland 20707-3598

National Technical Institute for the Deaf

Office of Postsecondary Career

Career Studies in Deafness

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN OTHER THAN PAPER COPY HAS BEEN GRANTED BY
J. MacLeod Gallimore
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Presented at the Annual Meeting of the American Educational Research Association, Atlanta, GA. April 14, 1993.

BEST COPY AVAILABLE

EC 305637

ABSTRACT

In an effort to ascertain whether being deaf and also being a member of an ethnic minority group engenders dual disadvantages, the educational, labor force participation, occupations, earnings and socioeconomic status of deaf adults (n=6430) were compared by race. Comparisons were also done with racial groups in the general population. Results demonstrate that deaf ethnic minorities show patterns of attainment which mirror those of their ethnic counterparts in the general population, but are negatively intensified due to the combined effects of being both deaf and an ethnic minority. Deaf Whites and Asians earned the largest percentage of postsecondary degrees, and at higher award levels. They were also more often employed. Deaf Blacks and Hispanics least often completed postsecondary degrees. Deaf Blacks were second only to deaf American Indians for high rates of unemployment. All variables considered, Blacks in this sample experienced the lowest attainment of the groups. These outcomes confirm that deaf ethnic minority adults do in fact suffer from dual disadvantages. More disturbing is that not only are they under achieving compaired to White majority peers, but minorities are the fastest growing hearing & deaf school aged populations in the United States. So, it is crucial that all minority groups be provided with educational opportunities & supports they need in order to achieve their potential.

An increasing awareness has developed over the past few years that our country's demographics are changing. If we look only at adults age 25 and over, our current population comprises 14 percent minority persons (U.S. Department of Commerce, 1991). Demographers are projecting, however, that our so-called minority population is growing at a rate which will render viewing them as such passe. Poor and minority children in the U.S. constituted 17 percent of the population in 1985, projected to increase to 35 percent by 2025 (Hathaway, et al, 1989). Even now, 27 percent of all public school students in the United States are those with minority status and 24 of the largest city school systems have what could be termed a minority "majority." Texas (46%), Florida (33%), California (48%) and New York (33%) are states whose minority populations exceed the average of 27 percent. By the year 2010 or so, one out of three persons in the United States will be Black, Hispanic, or Asian-American (Hodgkinson, 1991).

Why so much attention is being directed toward minority status and increases in those populations pertains not so much to the cultural effects that shifts in racial and ethnic ratios may have upon society, but more to the fact that minority status has also been associated with lower socioeconomic status. One's socioeconomic status is a function of level of education, occupation, and earnings. Many of these minority groups are not achieving equally with the majority population. This situation will surely have long-range negative ramifications for society as a whole if effective educational interventions are not undertaken.

But what are the implications for those who embody more than one minority status; in this instance, being both deaf and a member of an ethnic minority? Do deaf individuals with other minority status identities experience multiple minority disadvantages? One might suspect so, but until recently deafness has been treated more as a common denominator of circumstances overriding co-existence of any others. Perhaps this thinking grew out of the concept that deafness itself, does not discriminate on the basis of race, color, creed or national origin, thereby assuming equal status, or at least, same status. Most of the literature has concentrated on one condition or the other, that is, being a member of an ethnic minority group, or being deaf.

However, the Black deaf community began to draw together to address their unique problems back in the 1960's -- much of it spurred by the vestiges of segregation they endured, and the fact that their numbers were

strong. When the "separate but equal" law was overruled in 1954 desegregation efforts were begun generally in the United States. But as late 1964 the Babbidge report announced that 13 states still had separate schools for deaf Blacks and Whites. In the early 1970's many Black deaf educators and counselors rallied to bring the educational and socioeconomic crisis among the Black deaf population to the attention of the educational system (Bowe, 1971; Anderson & Bowe, 1972; Hairston, 1972; Anderson, 1972; Magness, 1972; Hairston & Smith, 1973; Lombardo, 1976).

The studies done by Lunde and Bigman (1959) and later, Schein and Delk (1974) on the deaf population of the United States contained some data on conditions of minority deaf persons, which at that time as is currently the case, were primarily deaf Blacks. Their findings prompted further efforts by Black educators and counselors to address the inequities identified in the education and employment of deaf Black people. The National Association of the Deaf had opened its doors to Black deaf members in 1965, but the need to address the unique problems experienced by deaf Blacks brought about the formation of The National Deaf Black Advocates organization in 1982 (Gallaudet Today, 1990-91).

Throughout the 1980's, however, not much public attention was focused on issues of equality and on affirmative action programs for minorities, and certainly less for minority deaf adults specifically. During that time, although there were many people still working toward improved conditions, the general political climate seemed to quell some of the public concern and activism. But, as we entered the last decade of the 20th century demographers, economists, and social scientists began to renew calls for proactive intervention in response to the current and projected effects that our country's rapid changing population growth and distribution would have upon social, political, and educational systems, and ultimately, on the economy. Renewed attention is being directed toward minority populations and their attainments. Educators in the field of deafness are equally concerned about the problems that deaf persons who also share ethnic minority status face educationally and socially. Once again, the educational system is being redressed to develop programs that will respond to the needs of deaf minority students.

The number of students graduating from high schools nationally has improved as a whole; however, rates of progression to college have declined

among some minority groups since the late 1970's, a time when there were nearly equal rates of college enrollment among groups. The gap began to widen around 1979 and continued through the 1980's (Hodgkinson, 1986; Sudarkasa, 1988; Carter & Wilson, 1991). From 1978 to 1985 the progression rate for Blacks declined steadily from 41.6 percent to a low of 38.5 percent, and then a low of 29 percent in 1988. Hispanics experienced a progression rate of 49 percent in 1974 which was higher than for Blacks or Whites. But this lead dropped to 44.7 percent in 1985 (Solmon & Wingard, 1990) and by 1988 it dropped to 27 percent (Carter & Wilson, 1991; U.S. Department of Education, 1992). This compares with 43 percent of whites age 18 to 19 enrolled in college as of 1988. Data on American Indians age 18-24 show that while their population doubled from 1970 to 1980, the absolute number going on to college actually decreased (Tijerina & Biemer, 1987-88). They evidenced moderate growth from 1988 to 1990, but nevertheless, still represent less than one percent of enrollments in higher education (Carter & Wilson, 1991).

Several factors are felt to be contributory to these declines among minority groups. First, high school graduation is prerequisite for college, and percentages of minorities graduating from high school are not continuing to rise equal to the growth rate in their populations, particularly among Hispanics. Second, college tuitions have risen much faster than the rate of inflation as scholarships and federal loans also have become scarcer or harder to procure. The financial burden of paying for college expenses while deferring income, is often untenable for minority high school graduates. Third, it has been suggested that in an attempt to increase high school graduation rates, minority students have been tracked in vocational rather than college preparatory programs, which reduces the likelihood of their going on to college. Finally, and perhaps most importantly, the decade of the 1980's was characterized by a general trend of indifference on the part of our country's administration toward affirmative action practices and policies, in what educator Phillip Altbach (1991) refers to as "The Legacy of Reaganism" - almost a decade of lack of concern over social problems generally, and specifically a reduction in funding for many educational programs which effectively reduced access to higher education for many poor and minority students.

What relationship do these statistics have to those for deaf persons? Over 35 percent of the 46,178 hearing impaired students counted in the

1988-89 Annual Survey of Hearing Impaired Youth were from ethnic minority backgrounds. Black deaf students are second only to Whites in attendance at programs serving the deaf (Anderson & Grace, 1991), and Hispanic students are the fastest growing population of youth--17.7 percent are between the ages of ten and 19--and are becoming the majority in many urban educational programs for the deaf (Rodriguez & Santiviago, 1991).

Deaf students struggle with the demands of learning materials which are English language based in environments often dependent upon oral communication. Those who have a solid language base, and good support at home and/or at school manage to achieve levels of English reading sufficient for high school level completion or for college. Yet many do not achieve the reading levels required to complete high school, let alone postsecondary degree programs. The average deaf person leaves high school with less than a fourth grade reading level (Allen, 1990). Although anywhere from 35 to 50 percent of deaf high school graduates do go on to some type of postsecondary program, over 48 percent of them leave high school without a diploma (Allen, et al, 1989). Of those who do not earn diplomas, 20 percent receive certificates and 29 percent drop out or age out. Males are more likely to be awarded diplomas than females, and even fewer Black and Hispanic deaf students receive diplomas relative to their White counterparts (Schildroth, et al, 1991).

Hispanic deaf students have lower reading comprehension and math computation scores than Whites and are more likely to drop out of school (Allen, 1986). Blacks very often reside in states that have minimum competency requirements for earning a high school diploma, and it is possible that this explains why more of them are awarded certificates rather than diplomas, and are more often vocationally tracked. It is speculative whether this is advantageous because it provides good vocational training, or is disadvantageous because it narrows prospects for work or college after high school (Allen, Rawlings & Schildroth, 1989).

In their transition study of hearing impaired youth Allen, Rawlings and Schildroth (1989) discovered that while in high school, Black and Hispanic deaf students received less academic training - 44 and 42 percent, respectively, as compared to Whites who received 62 percent of their courses in primarily academic areas. Moreover, minority deaf students were more often enrolled in vocational programs that required lower levels of academic

skill. When White students received vocational training, it was more often in computer related fields versus food preparation programs or automotive repair, which was more common among minority deaf students. This was seen as not only reflecting societal stereotypes for minorities, but to have negative implications for landing higher paying jobs. This in turn translates to lower relative socioeconomic status. Schildroth, et al (1991) view this situation as being circular; that is, minority deaf students leave high school with lower levels of academic achievement as well as with training less likely to lead to good paying jobs. Yet, these are the very students who are tracked for vocational training, which in turn reduces the amount of academics received, further insuring that their training will be vocationally versus academically oriented.

Most probably no conscience effort has been made to pigeon-hole or track these students in stereotypical ways. However, negligence is not always benign and its consequences should signal an alert. We know that deaf persons as a minority group often ride on the tail of prevalent social and economic circumstances experiencing relatively improved conditions when times are good, but worsened conditions when they are bad, specifically in terms of employment and occupational status. What we have learned thus far is that deafness or ethnic minority status has associated negative consequences which are only compounded when the two are coexistent.

The secondary educational experiences of White and minority deaf adolescents that Allen, Rawlings and Schildroth (1989); Schildroth, et al (1991); Cohen (1991); Grace and Anderson (1991); Rogriquez and Santiviago (1991), and others have documented serve as a launching point for this study. It picks up at the point of high school graduation--often referred to as the transition year from school to adult life--and goes beyond to provide a profile of deaf adults. Further, it explores whether or not deaf adults who are also ethnic minorities experience a double liability by virtue of dual minority membership.

METHODS

Information concerning the continuing education activities, labor force participation, occupations, earnings, and socioeconomic status of deaf high school graduates is gathered annually via survey instrument. According to the design of the program, graduates who are one, three, five, ten and twenty years out of high school at the time of the survey are sent

questionnaires by their alma matters. Survey years included in this study are 1982 through 1992. The data are encoded using the following coding systems: National Center for Education Statistics Classification of Instructional Programs, Bureau of the Census Occupational Classification, and the Stevens and Cho Socioeconomic Index. Descriptive statistics and some analyses of variance were used in this study to analyze each of the targeted variables by race: White, Black, Hispanic, Asian, American Indian, and Other.[1] Statistics on the general population for similarly aged persons were used for comparisons where appropriate.

Data Source

Data are gathered annually as part of the service program, the Secondary School Graduate Follow-up Program for the Deaf, which is managed by the National Technical Institute for the Deaf (NTID), a college of the Rochester Institute of Technology. The program assists schools for the deaf around the country in learning about the status of their students after high school. Approximately 25 schools per year participate, the majority of which are residential schools for the deaf, although five are day programs. Most have been involved with the program for over five years, some as long as 12 years. Schools locate their graduates and send them questionnaires. Completed questionnaires are forwarded to NTID where they are encoded, keyed, and analyzed. Individual school data reports are compiled and sent to each participating school. The data base consists of 6,430 respondents, 1,144 of whom are non-White. Ages range from 17 to 45 years, averaging age 25.

There are several considerations that need to be noted before comparing this sample of deaf high school graduates to other survey information gathered and to national data. The Secondary School Graduate Follow-up gathers postsecondary information strictly on the deaf high school students who have received either diplomas or certificates of graduation. Students who dropped out or aged out are therefore not included among those surveyed. Most are graduates of residential programs for the deaf, as opposed to mainstreamed environments. Further, while there is a broad regional representation of deaf high school graduates among the sample, not

---

[1] *These are the terms that will be used to designate racial groups throughout the paper. I recognize that there are other alternative ethnic identifiers used that may be preferred by some. Since there is no agreed upon standard for such designations, the terms used here are those intended to be most general and inclusive.*

all states are included. Finally, the data gathered on these graduates spans survey years 1982 through 1992. Over this time period and during their birth years there have been changes in growth rates of minority populations.

RESULTS

In spite of these qualifications, percentages of minorities comprising the sample are not far different from those occurring in the general population. Table 1 contains a breakdown of the deaf high school graduates by race. It also includes national percentages of minorities. National reporting of the racial makeup of the population varies depending upon the ages included in the counts--the highest minority percentages occurring in the elementary through high school aged population. Since this sample covers ages that range 17 to 45, I elected to use the national figures that included all ages as the comparison group for this study (U.S. Department of Commerce, 1991).

Table 1. Distribution By Race

Race	Number	Percent	National Percent
White	5322	83.0	76.4
Black	691	10.8	11.5
Hispanic	242	3.8	8.5
Asian	72	1.1	2.8
American Indian	49	.8	.8
Other	36	.6	*

*For National data many who might be categorized as Other are subsumed under Hispanic origin which can include any race.

The deaf secondary graduates represent only slightly more Whites, equivalent Blacks and American Indians, and slightly less than half the percentage for both Hispanics and Asians than occurs in the general population. The category of "Other" is not accounted for in all national race breakdowns and it is not clear which groups this includes. However, when included, percentages reported are often larger for Other than for American Indians, as was the case among the Follow-up sample.

Education

The Follow-up Program gathers three categories of educational information from the deaf secondary graduates it surveys. They are asked about any types of postsecondary educational activities they have ever undertaken, what degrees or awards they have earned, and whether or not

they are currently in some sort of postsecondary program. Additionally, they are asked what type of instructional program they have either earned degrees in or are currently pursuing, and at what schools. These data allow us to differentiate the various levels and types of education attempted and achieved by each of the racial groups. Annually over 60 percent of the respondents report having undertaken some form of postsecondary education. However, percentages actually completing degree or award programs averages between 16 and 17 percent, and these figures are influenced by differing racial contributions. Table 2 contains information about percentages having attempted postsecondary educational programs, completed degree programs, and currently in school, by race.

Table 2. Postsecondary Educational Activities By Race

	White	Black	Hispanic	Asian	Amer. Indian	Other
EDUCATION UNDERTAKEN						
Continuing Ed. Courses	16.7	17.5	19.4	13.9	18.4	22.2
Apprenticeship	10.1	13.9	18.6	11.1	16.3	16.7
Licensing	1.9	2.3	1.7	0.0	4.1	2.8
College Degree Programs	40.8	16.9	28.1	50.0	24.5	25.0
LEVEL OF EDUCATION COMPLETED						
High School Only	80.6	93.8	90.5	81.9	85.7	83.3
1 - 3 Year Degrees	13.8	5.8	7.4	12.5	14.3	13.9
Bachelor's and Higher Degrees	5.6	0.4	2.1	5.6	0.0	2.8
CURRENTLY IN SCHOOL	31.1	22.2	33.8	51.4	20.4	33.3

Education Undertaken. The racial groups exhibit different patterns of educational undertakings. Asians and Whites are more likely to pursue college degree programs than the other groups. This is one of the reasons that until recently, Asians have not been classified as a minority group. They either mirror or surpass the educational achievements of the White majority population. In this regard, the Follow-up deaf graduates appear to resemble their hearing racial counterparts. Hispanics in this sample entered college degree programs in relatively high percentages; however, their completion rates were not commensurate. Hispanics more so than the other groups became involved in apprenticeship programs. This concurs with Allen, Rawlings and Schildroth (1989) who found that Hispanics were most likely to receive training outside of school, on-the-job, instead of vocational training obtained through the high school as was more common for Blacks. In this sample, American Indians and those classified as Other were also more likely

to become apprenticed and to have earned licenses. Whites relative to all other groups were least likely to go into apprenticeships.

Level of Education Completed. Knowing the types of education each of the groups have attempted is informative, but perhaps even more important is knowing what levels are achieved. For this purpose in Table 2 the graduates are categorized according to three levels of attainment: high school only; subbaccalaureate (one- to three-year degrees); and baccalaureate and higher.

Blacks, were least likely to have gone on to college after high school, and Hispanics followed second. Blacks and Hispanics also earned fewer subbaccalaureate degrees relative to other groups. And within this degree level, seventy five percent of the degrees earned by Blacks were certificates or diplomas, as opposed to associate level degrees, and less than one percent earned bachelor's degrees. Hispanics fared better, although only by a small margin. In this regard it appears that particularly among Black deaf students, patterns found at the high school level are also repeated at the postsecondary level. Fewer progress to college, and those who do are more likely to pursue vocational versus academic types of degree programs.

The American Indians exceeded both Blacks and Hispanics in this population for progression to college, yet none reported having earned a baccalaureate level degree. Whites, Asians and those classified at Other, demonstrated the highest rates of postsecondary completion among groups. Asians also earned the highest relative percentage of baccalaureate level degrees.

Instructional Programs. Deaf high school graduates who respond to the yearly surveys report completion of or enrollment in a wide variety of instructional programs. However, due to absolute numbers of minorities responding and even smaller percentages of whom also go on to college and earn degrees, analysis of program choice differences among them might lead to erroneous conclusions. In spite of this qualification, some disparities can be noted by way of omission. Among Whites, but *not* among our minority groups degrees were reported in the program categories of Engineering Technologies (with the exception of one Hispanic student), Life Sciences, Allied Health, Mathematics, Physical Education, Physical Sciences, Psychology, Public Affairs. What is most apparent here is not that the minority students could not or would not enter such programs, but that these

programs are primarily those in which baccalaureate or at least an associate's level degree is earned, and as we have seen, relatively few of the minority deaf students achieved bachelor's degrees. This does indicate that poor academic preparation and stereotypical placements can set up a very delimiting, self-fulfilling educational process.

Choice of program does in part determine the level of award or degree one can achieve, and these choices, particularly for deaf students, also relate to the number and type of available schools to choose among, the high school courses taken, and finances. There are over 150 postsecondary institutions offering support services for deaf students in the United States, some of which are at the bachelor's level and higher. Still, most of these schools offer instructional programs to deaf students at the certificate, diploma and associate's award levels.

Many deaf high school students, unlike their hearing counterparts, are also influenced by the intervention of offices of vocational rehabilitation which often play a large role in determining the postsecondary pursuits of deaf high school graduates. These offices are generally bound by budgets and policies that dictate local placements where feasible because attendance at out of state schools is more costly to support. Obviously this does not preclude attendance at more distant programs if the student qualifies and/or there are no comparable programs locally. But initial placements and financial aid decisions, particularly for deaf graduates who have fewer financial resources and are less well academically prepared, are often constricted.

Hearing minorities exhibit patterns of educational activity similar to our deaf sample, even without the added consideration of rehabilitation agencies. They also are more likely to attend local community or vocational/technical schools simply because attending more distant schools increases the cost of their education (Solmon & Wingard, 1991). Moreover, community based colleges are often more accommodating to students who must also work while in school. And as mentioned earlier, fewer years of income are deferred in pursuit of subbaccalaureate degrees, something which is frequently a paramount concern among minority students from poorer backgrounds.

Currently Enrolled. White deaf high school graduates overall reported the highest rates and levels of postsecondary completion, and Asians, a close second. However, a significantly higher percentage of Asians relative to the

other groups reported that they were also currently enrolled. American Indians and Blacks reported lowest relative percentages currently enrolled.

Although not included in Table 2, analysis of enrollment was done by age to see if it was a factor in rates of postsecondary attendance. Asians in the sample were found to commit to college earlier, more often persisted to completion, and were more often currently enrolled as late as ages 25 to 34 relative to the other groups. Hispanics were enrolled at fairly high rates, but completion was not commensurate with either Whites or Asians. Blacks were the least likely to be enrolled relative to the other groups, but especially past age 34. This pattern is found among Blacks in the general population as well (Meisenheimer II, 1990).

Labor Force Status

Deaf persons overall experience depressed labor force conditions relative to the hearing population. They are often underemployed as well as unemployed at much higher levels - two to three times the rate of hearing counterparts--particularly at the early stages of their labor force participation. And without some sort of postsecondary education they are not likely to be employed at other than service or laborer types of work.

Labor force participants are two categories of workers. They are either working, or they are unemployed and actively looking for work. Those who are neither working nor looking are classified as being out of the labor force, that is, non-participants. The overall participation and unemployment rates of our sample populations are contained in Table 3.

Table 3. Labor Force Status By Race

	Participation Rate	Unemployment Rate
White	69.0	27.8
Black	69.4	44.8
Hispanic	62.4	35.1
Asian	47.2	23.5
American Indian	73.4	66.6
Other	80.6	41.4

The highest participation rates for the groups in this sample occurred among American Indians and Others (upper 70's%), and lowest rates among Asians (47%). Despite the relatively high participation rates, American Indians were also the most likely to be unemployed, and Blacks second. Asians who were least likely to participate in the labor force within this

sample, also experienced the lowest unemployment of all groups. This is in large measure explained by the fact that as was noted previously, Asians were more often in college right out of high school, remained long enough to earn associate's and bachelor's degrees, and then entered the work force. So, rather than seeking work directly after high school relatively greater percentages are out of the labor force pursuing degrees. The converse explains the very different profile revealed for American Indians who less often were in college, and when they attended, were more likely to end their education at completion of one- to three-year degrees.

The fact is, earning a baccalaureate degree markedly improves one's chances of finding employment. This has been shown in other studies done both with hearing and deaf persons: Bowen, 1977; Jencks et al., 1979; Knox, Lindsay, and Kolb, 1988; Leslie and Brinkman, 1986; Sewell and Hauser, 1972 (cited in Pascarella & Terenzini, 1991); Walter and MacLeod-Gallinger, 1989; and Welsh and Walter, 1988. In this sample none of the deaf Blacks, Hispanics, Asians or Others who had earned associate's degrees or higher were unemployed. While this certainly attests to the value of a college degree, unfortunately the high unemployment exhibited in varying levels by each minority subgroup is due to the fact that a majority (83 percent overall) of them had not yet or had never completed postsecondary degree programs. Only among the better educated do we see significant reductions in unemployment levels. And the greatest gains in employment levels are experienced by bachelor's and higher degree recipients whose rates most closely coincide with those of hearing peers.

Age also affects employment levels. Generally, employment rates improve with time in the work force. Experience and/or education serve to make one more employable. Table 4 contains unemployment rates by age and race. Both participation and employment rates increased for all of the subgroups in this sample as age increased, with the exception of American Indians, half of whom ages 25 to 34 were unemployed. The employment rate improvements are relative, however. Blacks and Hispanics age 25 to 34 in the sample reported unemployment rates in the low thirties percent, Whites close to 18 percent, and Asians at 11 percent. Comparable rates for hearing minority persons were one third lower than those for the deaf sample (Employment & Earnings, 1991). Although numbers reporting were generally small in the age 35 and over category, for all but American Indians and

Others, substantially fewer or none among them were unemployed as compared to the younger age groups.

Table 4. Unemployment Rates By Age and Race

	16-19	20-24	25-34	35 and over
White	57.7	38.4	17.3	10.2
Black	50.0	50.2	34.7	0.0
Hispanic	100.0	37.4	32.2	0.0
Asian	N/A	33.3	10.0	0.0
American Indian	N/A	73.9	50.0	66.7
Other	N/A	69.2	16.7	25.0

Occupations

Education determines one's occupation and likelihood of employment, at least in theory. In our society, it is expected that individuals will seek out employment that is commensurate with one's skills and proclivities. Work is also one means by which we express ourselves as individuals. While not everyone is able to choose their occupation without constraints, the understanding is that by and large, people are free agents in this matter. Some jobs are more desirable that others, and more or less available. Choices are expanded by increased education and training. Moreover, a higher level degree increases a person's chances of being employed in Professional, Managerial or Technical occupations, many of which are also less industry-dependent and thereby, not as vulnerable to market expansions and contractions as are, for example, construction trades or manufacturing production jobs.

In order to determine in what occupations the respondents are employed, they are asked to provide their job title and what are their usual activities on the job. A job code is then assigned using the United States Bureau of the Census Occupational Classification System. These are grouped within six major categories. The distribution of employed respondents among these six groupings by race, is displayed in Table 5.

Table 5. Occupational Distribution By Race

	White	Black	Hispanic	Asian	Amer. Indian	Other
Operators Fabricators & Laborers	26.7	29.1	15.5	25.0	33.3	18.8
Precision Production Craft & Repair	9.8	4.4	16.5	4.2	16.7	6.3
Farming, Fishing & Forestry	2.9	1.5	2.1	8.3	0.0	6.3
Service Occupations	15.9	35.5	26.8	12.5	25.0	43.8
Technical, Sales & Admin. Support	35.5	27.7	33.0	33.3	25.0	25.0
Managerial & Professional Specialty	9.8	2.4	6.2	16.7	0.0	0.0

In general, all of the racial groups were more often employed as operatives, laborers or fabricators, which are considered unskilled or semi-skilled occupations; or in technical or administrative support areas; or in service jobs. However, each ethnic group was distributed differently among the six categories.

Asians were least likely to be occupied in precision production, etc., jobs relative to other groups, but most likely in comparison, to be employed as professionals or managers. Hispanics in this sample were more often in professional or managerial positions relative to Whites, while Blacks were least likely to be employed as such. The highest percentage of Blacks were employed in service jobs as were persons who indicated their race to be Other. Although Hispanics and American Indians were also frequently employed in service positions, they were more often in precision production areas relative to the other racial groups.

These occupational patterns reflect the areas and levels of training each group tends to pursue. As discussed earlier, Hispanics were more likely to receive their vocational training outside of the secondary school which often entails an apprenticeship arrangement, which in turn more often leads to precision production (skilled to semi-skilled) versus operative (unskilled to semi-skilled) kinds of employment. Blacks on the other hand, are more likely to gain all of their vocational training from within the secondary school in service oriented programs, which is where a large percentage of Blacks in this sample were eventually employed. Asians were most often of all others to be employed as professionals, which is not surprising in view of the fact that a relatively higher proportion of them had earned associate's and bachelor's degrees.

Job Finding Methods

Employed deaf high school graduates responding to the Follow-up survey are asked to indicate by what methods they found their current job. Although this does not tell us which method landed them the job, it does provide some information about their approach to and success with finding jobs. Their choices included private agencies, state employment offices, want ads, direct application, offices of vocational rehabilitation and other. The question was modeled after that used by the Bureau of Labor Statistics to gather similar data, except for "Vocational Rehabilitation Offices", and the category "Other", used in place of the Bureau's category of "friends or

relatives." Table 6 contains the relative use of these methods by each racial group.

Table 6. How Jobs Were Found By Race

	White	Black	Hispanic	Asian	Amer. Indian	Other
State Employment Agency	5.7	5.3	6.1	7.7	8.3	17.6
Private Employment Agency	2.9	1.1	3.1	0.0	0.0	5.9
Want Ads	9.6	7.9	8.2	7.7	8.3	5.9
Direct Application	31.2	19.2	29.6	26.9	33.3	23.5
Vocational Rehabilitation (VR) Offices	18.8	29.1	26.5	19.2	8.3	41.2
Other	31.1	19.2	30.6	34.6	16.7	35.3

Note: Percentages do not total 100 because more than one selection could be checked.

All of the possible methods were used to some degree by each of the ethnic groups. Whites and Asians had similar profiles of job finding contacts, and Hispanics were similar except that they more often sought the assistance of vocational rehabilitation (VR) offices. Blacks and persons categorized as Other were the most likely to go through VR offices. American Indians used VR offices the least, but relied heavily on direct application. And both Blacks and American Indians were the least likely to have used personal contacts such as friends or relatives. Persons categorized as Other used a wider variety of methods and frequently used both VR and personal contacts.

Historically there has been a strong tie between Black deaf students and offices of vocational rehabilitation. This may explain their relatively greater usage of VR offices for assistance in finding jobs, and less use of personal contacts as compared to the other groups. Hairston and Linwood (1983) found that among deaf Black adults they interviewed who obtained semi-skilled jobs or had gone on to college, most of this was the direct result of in-school training and subsequent assistance for job placement and/or education through VR offices. MacNeil (1990) also suggests that the emphasis upon vocational training versus academic or college preparatory tracks explains why the link between Black deaf high school students and VR offices has traditionally been strong. So irrespective of its ultimate efficacy, Black deaf adults more so than other groups seek out VR offices when searching for first jobs.

Earnings

Thus far we have discussed the types of postsecondary programs undertaken and degrees earned by the deaf ethnic subgroups in the deaf high school follow-up data, and ultimately, the categories of jobs they land. We are also interested in knowing how these outcomes relate in terms of earnings. Generally speaking, deaf adults have been found to earn less than hearing counterparts (Lunde & Bigman, 1959; Weinrich, 1972; Schein & Delk, 1974; Barnarrtt & Christiansen, 1985; MacLeod, 1981-1983; MacLeod-Gallinger, 1984-1990; Schroedel, 1989; Crammatte, 1989). Table 7 displays the mean weekly earnings of the ethnic groups for the deaf sample. Figures include both full and part-time earnings.

Overall the American Indians show the highest mean income for the groups, and Whites are second. This is interesting in view of the fact that thus far, we have seen that American Indians experience the highest rates of unemployment. However, in looking at full versus part-time employment, American Indians more than other groups were full-time employed when working. Blacks on the other hand, whose mean weekly earnings were

Table 7. **Mean Weekly Earnings of By Race: Follow-up Sample**

White	Black	Hispanic	Asian	American Indian	Other
$334.26	$250.16	$321.55	$314.96	$372.66	$316.39

Note: All earnings have been converted to 1992 dollars according to the Consumer Price Index.

lowest demonstrated full to part-time ratios more in line with Whites, that is, two to one. The earnings of the other three groups--Hispanics, Asians and Other--were very close. When earnings of only the full-time employed are examined, the hierarchy appears somewhat different. Asians had the highest overall earnings, Whites second, American Indians third, Hispanics and Others a close fourth and fifth, and Blacks the lowest average earnings. Again, there is a relationship between earnings and educational level. Asians have generally higher levels of education and also earnings. Blacks have lower educational attainment, and lower corresponding earnings, despite active labor force participation.

To determine whether or not these earnings differences were statistically significant, one way analyses of variance were run. Using the

Duncan procedure, at the .05 level, the earnings differences between pairs Whites and Blacks, and Hispanics and Blacks, were significant (the Scheffe test showed significance only for the White and Black groups). This serves as reminder that although much has been done over the recent past to improve opportunities for deaf adults, and for deaf minorities also, deaf Blacks are still falling behind in overall educational and occupational attainments. Due to small numbers, differences between other groups did not prove significant. Nevertheless, there continues to be a hierarchical relationship for the groups that persists across numerous related variables.

We now have an idea where the ethnic groups stand in relation to each other as pertains to earnings. Next we examine the relationship between groups and compare their earnings with the same groups nationally. Data concerning earnings of various ethnic groups is not widely available, except that the Bureau of Labor Statistics does regularly report on median weekly earnings of Whites, Blacks and Hispanics. So these are the references we will use in comparing our deaf sample of minority workers. Table 8 compares the median weekly earnings of the ethnic groups with national data. National data uses medians, or the midpoint of earnings in reporting rather than means, or average earnings. Therefore, the weekly earnings reported in Table 8 for the deaf sample differ from those in reported in Table 7.

Table 8. **Median Weekly Earnings of Workers by Race**

	Deaf Sample	National*
Whites	$305	$425
Blacks	$223	$286
Hispanics	$265	$311
Asians	$274	N/A
American Indian	$350	N/A
Other	$263	N/A

*Source: U.S. Department of Labor, Bureau of Labor Statistics, USDL 92-232 (April 24, 1992), First Quarter 1992 data for one earner only.

Although workers of each ethnic group nationally earned more than their deaf correlatives, the largest gap was between White hearing and deaf earners--the deaf earning only 72 percent of the hearing workers. Among the deaf sample, again, American Indians demonstrated the highest median weekly earnings. This may be misleading due to small numbers of them responding and more importantly, the small relative percentage of deaf

American Indian respondents who were employed. Probably the most meaningful comparisons are among White, Black and Hispanic deaf respondents for whom statistically significant differences were found. Regardless of mean or median weekly figures reported, Blacks exhibited the lowest earnings of all ethnic subgroups. Yet, when the earnings of each subgroup were examined by education, it was discovered that Blacks who had completed bachelor's degrees had earnings comparable to other groups with equivalent education. In spite of the small number who fall into this category, the results do suggest that if more went on to complete postsecondary education, specifically associates and higher levels, they would not occupy the lowest relative position among groups.

Socioeconomic Status

The educational, occupational and earnings characteristics of each of the ethnic groups have been described. One way to interrelate these components of attainments is through use of the Socioeconomic Index (SEI) developed by Stevens & Cho (1985). The scale combines all three characteristics to derive an index of status. Scores on the scale range from a low of 13.98 for operative jobs (e.g., winding and twisting machine operators) to a high of 90.45 for professional specialty jobs (e.g., law teachers). Table 9 contains the mean socioeconomic index for all six groups, the total sample mean, and the mean for the scale itself, which is derived from national samplings. The minimum and maximum scores are listed for each.

Table 9. Socioeconomic Index of Employed Person By Race

	Mean	Minimum	Maximum
White	29.15	13.98	85.53
Black	23.21	14.53	82.44
Hispanic	27.11	15.71	78.97
Asian	31.16	16.11	75.14
American Indian	23.96	16.11	32.58
Other	21.75	17.75	30.25
Total Sample Mean	(28.61)		
SEI Mean	36.35	13.98	90.45

Results are not surprising in view of what we have seen thus far. The deaf Asian group demonstrated the highest relative socioeconomic index, Whites second, and Hispanics, third. Blacks and American Indians had lower indexes and Other, the lowest. Although the minimum and maximum scores

for most groups spanned a range of at least 50 points, for American Indians and Others the range was less than 17 points. This is primarily due to the relatively lower levels of education attained by these two groups.

Despite the high earnings reported by deaf American Indians, none had earned bachelor's level degrees, and the range of occupations reported by them were all below managerial or professional specialty level. A few reported high weekly earnings, as is oftentimes associated with precision production jobs, but which are not occupations carrying higher educational levels. Moreover, a larger percentage of American Indians also reported full-time versus part-time jobs as compared to the other groups. In contrast, although Blacks reported a wide range of jobs, the majority were concentrated at the lower end of the SEI scale, indicated by their total mean score. Whites, Asians, and Hispanics had significantly different mean scores in relation to Blacks whose overall SEI was the second lowest.

DISCUSSION

Racial and cultural minority status are associated with lower socioeconomic status. And minority within minority status appears to act as an exponential factor in this regard. The experiences of the deaf ethnic groups examined in this study very much parallel those of their counterparts in the general population. Yet they were compounded by deafness. In general, the deaf population endures depressed labor force, occupational and earnings conditions relative to the hearing population. The data have indicated that those who are also members of ethnic minorities face additional disadvantages.

Across educational, labor force, occupational and earnings variables the ethnic subgroups maintained a consistent relative standing (excepting Others, whose standing was variable). Asians and Whites generally held first or second place, Hispanics third, and Blacks or American Indians alternating for fourth and fifth place. This is precisely what occurs in the general population, but the circumstances are many times exaggerated for the deaf ethnic groups. Deaf adults are unemployed three times the rate as their hearing counterparts, their earnings are only three quarters that of hearing workers, and they are most likely to be employed as operatives and service workers, except when bachelor's degrees have been earned. Educationally they trail even further behind hearing groups. There is testimony that stereotyping along racial and ethnic lines is just as prevalent among the deaf

as it is among hearing persons of the same backgrounds (Stuart & Gilchrist, 1991; Anderson & Grace, 1991).

Each of the ethnic groups in this study share the commonality of deafness and age range. But beyond that they have to contend with differing cultural biases and conditions. Deaf Black students for many years attended separate schools for the deaf. Along with this separateness went the usual associated unequalness that typified the educational system of our recent past. The vocational curriculum for instance, was limited to a small number of programs which were service and semi-skilled in orientation. While many students did leave high school with a marketable trade, very often they were not awarded certificates of graduation, precluding their entry into college programs (Hairston & Smith, 1983). Although this occurred primarily before desegregation laws were enacted, patterns were established which apparently have not been entirely broken. This was discussed earlier referring to work done by Allen, et al (1989) where a preponderance toward vocational tracking of minority deaf, and particularly Black deaf students, was found. Very few of the Blacks in the Follow-up sample went on to complete postsecondary programs and of those who did, the majority received certificates and diplomas in very vocationally oriented programs.

The hurdles faced by Hispanic deaf students relate more to language and cultural differences. Some have suggested that the Hispanic culture treats disability fatalistically, and therefore Hispanic parents have lower expectations about a deaf child's potential, and tend to be more protective. Moreover, they are described as having a different perspective on advocacy, and are at a disadvantage in the American school system where parents are expected to advocate for themselves with school personnel instead of through the political system, which is their cultural tradition (Rodriguez & Santiviago, 1991). This has implications for working with vocational rehabilitation agencies where parents need to play a more direct role with respect to their deaf child's education.

Both Blacks and Hispanics are more often educated in self-contained classes or institutions for the deaf which means they are segregated from hearing students. Another consequence of this situation is less access to special resources (Schildroth, 1986). Deaf Hispanic youth are more likely to drop out of school than are Whites or Blacks. However, in our sample, the Hispanics demonstrated higher educational attainment relative to Blacks. We

do not know how many in the potential pool of respondents dropped out of high school. But Hispanic high school graduates who responded to the survey, reported having completed college more often than did Blacks. If they do go to college both Blacks and Hispanics tend to enter two-year versus four-year educational institutions. Other studies have found evidence that attendance at a two-year institution reduces the likelihood that a student will go on to earn a bachelor's degree (Pascarella & Terenzini, 1991). This does not diminish the value of having completed some college, but it does reduce the chances of going on to earn a bachelor's degree. For deaf adults, earning a baccalaureate level degree serves as a ticket to achieving parity with similarly educated hearing peers.

Hispanics are apprenticed more often than Blacks and therefore obtain on-the-job type training which often leads to technical or precision production jobs. This accounts in part for their higher average earnings relative to Blacks, who more often receive their training in high school or go on to earn certificates in vocational areas that lead to employment in service occupations which are typically lower paying.

Although not a lot has been documented about the conditions of deaf Hispanics even less is known about deaf American Indians. Their relative numbers are small. Generally speaking, American Indians have fared comparatively worse educationally and in the labor force than other minority groups. Their high school graduation rates have lagged behind that for the population as a whole and less than one percent earn baccalaureate degrees (Carter & Wilson, 1991). Because of divergent cultural traditions and physical and legal separation from the mainstream, they have experienced even greater disadvantages than other minority groups. High unemployment and poor education have taken a toll on the American Indians generally in the United States. A comparatively high percentage of deaf American Indians in the sample completed postsecondary education, but none had earned above an associate's degree. Like the Hispanics, they were more often in apprenticeship programs which did translate into overall high earnings. However, since deaf American Indians demonstrated the highest unemployment rates relative to other groups, this means that we are talking about a relatively few well-paid representatives.

Just as occurs nationally, deaf Asians and Whites surpass other groups for overall attainment. More deaf Asians completed higher level

degrees than any the other minority groups, experienced the lowest unemployment rates, and were more often employed as managers or professionals, the sum of which resulted in all the highest socioeconomic index of the sample groups. For overall college completion rates and earnings, deaf Asians were second only to the deaf White majority. Again, the patterns of attainment found among the deaf ethnic groups in the sample run a lower range, but parallel those of the same groups in the larger society.

In view of the stereotypical placements and overall lower achievement found among deaf minorities, it seems clear that first, it is essential that efforts be made to break out of habitual ways of placing, tracking, and assuming competencies. Then, strides should be made toward ensuring that more deaf students receive high school diplomas. For those who are capable, a college degree program should be made a goal and backed with available supports. Vocational training is still important for many deaf students, but the options need to be expanded and kept current with economic demands for skilled workers.

The issue of ethnic bias and discrimination from without and within the deaf community is beginning to be addressed more systematically by educators of the deaf as part of the larger society's recognition of changing demographics and the potential ramifications that undereducating various groups of people with minority status can have. Emphasis is being placed upon not only understanding the educational needs of deaf students, but also understanding the customs and beliefs of the culture from which they come, and their need to develop positive identities within them.

REFERENCES

Allen, T. (1986). Understanding the scores: Hearing-impaired students and the Stanford Achievement Test (7th edition). Washington, DC: Gallaudet Research Institute, Center for Assessment and Demographic Studies (ERIC Document Reproduction Service No. ED 280247).

Allen, T. E., Rawlings, B. W., & Schildroth, A. N. (1989). Deaf students and the school-to-work transition. Baltimore, MD: Paul H. Brooks Publishing Co.

Allen, T. (1990). Personal Communication on restandardization of the SAT. Center for Assessment and Demographic Studies. Washington, DC: Gallaudet University.

Altbach, P. G. & Lomotey, K. (Eds.). (1991). The Racial Crisis in American Higher Education. Albany, NY: State University of New York Press.

Anderson, G. B. (1972). Vocational Rehabilitation Services and the Black Deaf. Journal of Rehabilitation of the Deaf, 126-128.

Anderson, G. B., & Bowe, F. G. (1972, December). Racism Within the Deaf Community. American Annals of the Deaf, 617-619.

Anderson, G., & Grace, C. (1991). Black Deaf Adolescents: A Diverse and Underserved Population. The Volta Review, 93(5), 73-88.

Babbidge, H. D. (1964). Report to the Secretary of Health Education and Welfare by the Advisory Committee on the Education of the Deaf. Washington, DC: U.S. Department of Health, Education and Welfare.

Barnartt, S. B. & Christiansen, J. B. (1985). The socioeconomic status of deaf workers: A minority group perspective. Social Science Journal, 32, 19-32.

Bowe, F. G. (1971, June). Non-White Deaf Persons: Educational, Psychological, and Occupational Considerations. American Annals of the Deaf, 357-361.

Brooks, D., Moore, C. M., & Allen, S. (1990). Black Deaf People in Higher Education. Unpublished Manuscript, Rochester Institute of Technology, National Technical Institute for the Deaf, Rochester, NY.

Carter, D. J. & Wilson, R. (1991). Minorities in higher education. Office of Minorities in Higher Education 10th Annual Status Report. Washington, DC: American Council on Education.

Cohen, O. P. (1991). At-Risk Deaf Adolescents. The Volta Review, 93(5), 57-72.

Cohen, O. P., Fischgrund, J. P., & Redding, R. (1990). Deaf Children From Ethnic, Linguistic and Racial Minority Backgrounds: An Overview. American Annals of the Deaf, 135(2), 67-73.

Crammatte, A. B. (Ed.). (1987). Meeting the challenge: Hearing-impaired professionals in the workplace. Washington, DC: Gallaudet University Press.

Hairston, E. (1972). Overview on problems of black deaf people. Journal of Rehabilitation of the Deaf, 6, 114-115.

Hairston, E. E., & Smith, L. (1973). Ethnic minorities amongst the deaf Population. American Annals of the Deaf, 195-202.

Hairston, E., & Smith, L. (1983). Black and deaf in America: Are we that different? Silver Spring: T. J. Publishers, Inc.

Hasazi, S. B., Gordon, L. R., & Roe, C. A. (1985). Factors associated with the employment status of handicapped youth exiting high school from 1979 to 1983. Exceptional Children, 51, 455-469.

Hodgkinson, H. L. (1986). Higher education: Diversity is our middle name. Research report. Washington, DC: National Institute of Independent Colleges and Universities.

Lombardo, A. S. (1976, March). An Examination of the Difficulties Encountered by the Deaf Black. The Deaf American, 23-26.

Lunde, R. S. & Bigman, S. K. (1959). Occupational conditions among the deaf: A report of a national survey. Washington, DC: Gallaudet College.

MacLeod, J. E., Welsh, W., & Parker, C. (1982). Graduate follow-up project of secondary programs for the deaf (third annual report). Rochester, NY: The National Technical Institute for the Deaf, Rochester Institute of Technology.

MacLeod, J. E. (1983). The secondary school graduate follow-up program of the hearing-impaired (fourth annual report). Rochester, NY: The National Technical Institute for the Deaf, Rochester Institute of Technology.

MacLeod-Gallinger, J. E. (1984-1988). The secondary school graduate follow-up program for the deaf (fifth through ninth annual reports). Rochester, NY: The National Technical Institute for the Deaf, Rochester Institute of Technology.

MacNeil, B. (1990). Educational needs for multicultural hearing-impaired students in the public school system. American Annals of the Deaf, 135(2), 75-82.

Magness, J. (1972). The main problem of black deaf people: Education. Journal of Rehabilitation of the Deaf, 123-125.

Meisenheimer, J. R., II. (November 1990). Black college graduates in the labor market, 1979 and 1989. Monthly Labor Review, 13-21.

National Center for Education Statistics. (1991). Trends in academic progress: Achievement of American students in science, 1970-90, mathematics, 1973-90, reading, 1971-90, and writing, 1984-90.

Rodriguez, O., & Santiviago, M. (1991). Hispanic deaf adolescents: A multicultural minority. The Volta Review, 93(5), 89-97.

Schein, J. D. & Delk, M. T., Jr. (1974). The deaf population of the United States. Silver Spring, MD: National Association of the Deaf.

Schildroth, A. (1986). Residential schools for deaf children: A decade in review. In A. Schildroth & M. Karchmer (Eds.), Deaf children in America 83-104. Boston, MA: Little, Brown and Company.

Schildroth, A., Rawlings, B., & Allen, T. (1991). Deaf students in transition: Education and employment issues for deaf adolescents. The Volta Review, 93(5), 41-53.

Schroedel, J. G. (1987). Predictors of socioeconomic status. In A. B. Crammatte, Meeting the challenge: Hearing-impaired professionals in the workplace.

Smith, L. (1972). Work-study programs and black deaf people. Journal of Rehabilitation of the Deaf, 116-119.

Solmon, L. C. & Wingard, T. L. (1991). The changing demographics: Problems and opportunities. In P. G. Altbach and K. Lomotey, (Eds.), The racial crisis in American higher education, 19-41. Albany, NY: State University of New York Press.

Stevens, G. & Cho, J. H. (1985). Socioeconomic indexes and the new 1980 census occupational classification scheme. Social Science Research, 14, 142-168.

Stuart, P. & Gilchrist, A. (Winter 1990-91). A sense of identity: Deaf minorities still struggle for acceptance of their heritage. In Nancy T. Moore (Ed.), Gallaudet Today. Washington, DC: Gallaudet University.

Tijerina, K. H., & Biemer, P. P. (1988). The Dance of Indian Higher Education: One Step Forward, Two Steps Back. Educational Record, 87-93.

U.S. Department of Commerce, Bureau of the Census (1991). Statistical abstracts of the United States (111th ed.). Washington, DC: U.S. Government Printing Office.

U.S. Department of Education, Office of Educational Research and Improvement: National Center for Education Statistics (1992). Trends in racial/ethnic enrollment in higher education: Fall 1980 through Fall 1990.

Weinrich, J. E. (1972). Direct economic costs of deafness in the United States. American Annals of the Deaf, 117, 446-454.